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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,175	11/25/2003	Oleg G. Gluschenkov	FIS920030304US1	1174

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INTERNATIONAL BUSINESS MACHINES CORPORATION
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EXAMINER

NGUYEN, THANH T

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/707,175

Applicant(s)

GLUSCHENKOV ET AL.

Examiner

Thanh T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 15-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, claims 1-14 in the reply filed on 4/15/05 is acknowledged.

Claims 15-25 are withdrawn from further consideration by the examiner, 37 C.F.R. 1.142(b) as being drawn to a non-elected invention. Election was made without traverse.

Oath/Declaration

Oath/Declaration filed on 11/25/03 has been considered.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

Claim 1 is objected to because of the following informalities: in claim 1, lines 13, there is a typographical error, it is suggested to delete "and". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 7, 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Murthy et al. (U.S. Patent No. 2004/0007724).

Referring to figures 7-14, Murthy et al. teaches a method of forming a semiconductor device, comprising:

providing a semiconductor structure comprising a silicon substrate (12) and a gate structure (22) formed on the silicon substrate, the gate structure further comprising a gate contact (14) and a gate insulator(18, see figure 7, 14, paragraph# 26);

selectively forming etched-away areas (40) in the substrate to expose sides of a channel region under the gate structure (see figure 7, paragraph# 36);

disposing a thin, highly-doped layer (52) of a silicidation stop material (SiGe) within the etched a-way areas (40, see paragraph# 45);

disposing a silicon fill (56) within the etched-away areas over a silicidation stop the silicidation stop material to; and (see paragraph# 44-49)

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performing silicidation to form silicide in the silicon fill, thereby forming source/drain silicide regions (74, see figure 14, paragraphs 52-54).

Regarding to claim 7, the silicidation stop material is in-situ doped (see paragraph# 45).

Regarding to claim 12, the semiconductor structure is an inchoate n-channel MOSFET (see paragraphs# 24, 56).

Regarding to claim 13, the semiconductor structure is an inchoate p-channel MOSFET (see paragraphs# 24, 56).

Regarding to claim 14, the semiconductor structure is part of an inchoate CMOS device (see paragraphs# 24, 56, noted that CMOS is NMOS+PMOS).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-6, 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murthy et al. (U.S. Patent No. 2004/0007724) as applied to claims 1, 7, 12-14 in view of ordinary skill in the requisite art.

Murthy et al. teaches a method of forming a semiconductor device with forming a highly doped layer of a silicidation stop material SiGe (see paragraph 45, meeting claim 3), forming a silicide cobalt (see paragraph# 52, meeting claim 4), the active dopant concentration is greater

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than 1019 atoms/cm³ (paragraph# 46, meet claim 10) wherein the silicidation temperature is about 400-500°C (see paragraph# 54), and forming ultra thin SiGe layer (see paragraph# 45).

However, the reference does not teach the specific silicidation temperature, and the thickness of the silicidation-stop extensions.

It would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made to optimize the specific silicidation temperature, and the thickness of the silicidation-stop extensions, since it has been held that where the general conditions of a claim are disclosed in the prior art (i.e.-hydrogenated dielectric layer), discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233 (CCPA 1955).

The specification contains no disclosure of either the critical nature of the claimed arrangement (i.e.- wherein the specific silicidation temperature, and the thickness of the silicidation-stop extensions.) or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen limitations or upon another variable recited in a claim, the applicant must show that the chosen limitations are critical. In re Woodruff, 919 F.2d 1575, 1578 (FED. Cir. 1990).

Therefore, it would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made would form the silicide film at a specific silicidation temperature in order to optimize the process and forming a silicidation-stop extensions at a specific thickness in order to obtain the smaller dimension device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (571) 272-1695, or by Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 6:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, can be reached on (571) 272-1702. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956 (See **MPEP 203.08**).



Thanh Nguyen
Patent Examiner
Patent Examining Group 2800

TTN